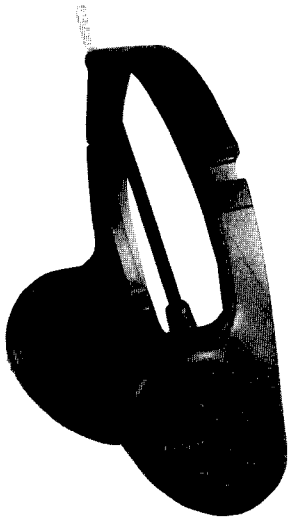
SRF-HM20

SERVICE MANUAL



US Model
AEP Model

SPECIFICATIONS

Frequency range	FM: 87.5 - 108 MHz AM: 530 - 1,710 kHz (US model) AM: 531 – 1.602kHz (AEP, Italian model)
Scan step	FM: 0.1 MHz AM: 10 kHz (US model) AM: 9kHz (AEP, Italian model)
Intermediate frequency	FM: 10.7MHz AM: 450kHz
Antennas	FM: Flexible antenna AM: Built-in ferrite bar antenna
Power output	15 mW + 15 mW (at 10% harmonic distortion)
Headphone type	Dynamic
Power requirements	3 V DC Two size AAA (R03) batteries
Battery life	For FM reception: Approx. 20 hours with Sony alkaline AM4 (N) Approx. 12 hours with Sony UM-4 (NU) For AM reception: Approx. 30 hours with Sony alkaline AM4 (N) Approx. 18 hours with Sony UM-4 (NU)
Weight	Approx. 193 g (6.8 oz) including batteries

Design and specifications subject to change without notice.

FEATURES

- AM/FM stereo PLL* synthesized headphone receiver
- Capability to preset up to 10 stations in the desired order
- Big size driver units for high quality sound
- FM flexible antenna
- Light reflector to reflect car lights at night for your safety
- Adjustable double headbands designed to fit your head

* PLL: Phase Locked Loop

Note on AM tuning interval

The AM tuning interval differs depending on areas. The interval of this unit is factory-set to 10 kHz.
Use this model only in North and South American countries.

Model	Step
US	10kHz
AEP, Italian	9kHz

MICROFILM

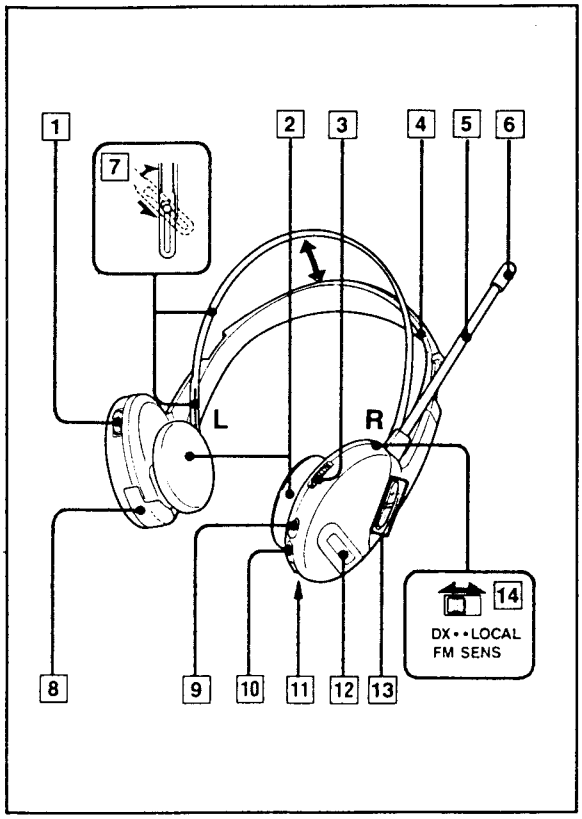
AM/FM STEREO PLL SYNTHESIZED HEADPHONE RECEIVER

SONY®

SECTION 1
GENERAL

This section is extracted from instruction manual.

LOCATION OF CONTROLS



1 **POWER switch**
2 **Driver units**
3 **VOL (volume) control**
4 **Headband**
Adjust it to fit your head.
5 **FM flexible antenna**
Use for FM reception.
6 **Light reflector**
This reflector reflects car lights at night for your safety.
7 **Support band**
Before putting on the receiver, pull out the support band fully from the headband. Then adjust it to fit your head.
When the receiver is not in use, put the support band back by pushing down both ends as illustrated and push it back underneath the headband.
8 **Battery compartment**
9 **ENTER button**
Use for storing a station.
10 **BAND button**
Use for changing AM and FM.
11 **TUNE (tuning) (+ or −) buttons**
Use for tunging the frequency.
12 **Display window**
The indicator displays the frequency and the preset number.
13 **MEMORY PRESET (+ or −) buttons**
Use for listening to a preset station.
14 **FM SENS (sensitivity) DX/LOCAL selector**

Notes on chip component replacement

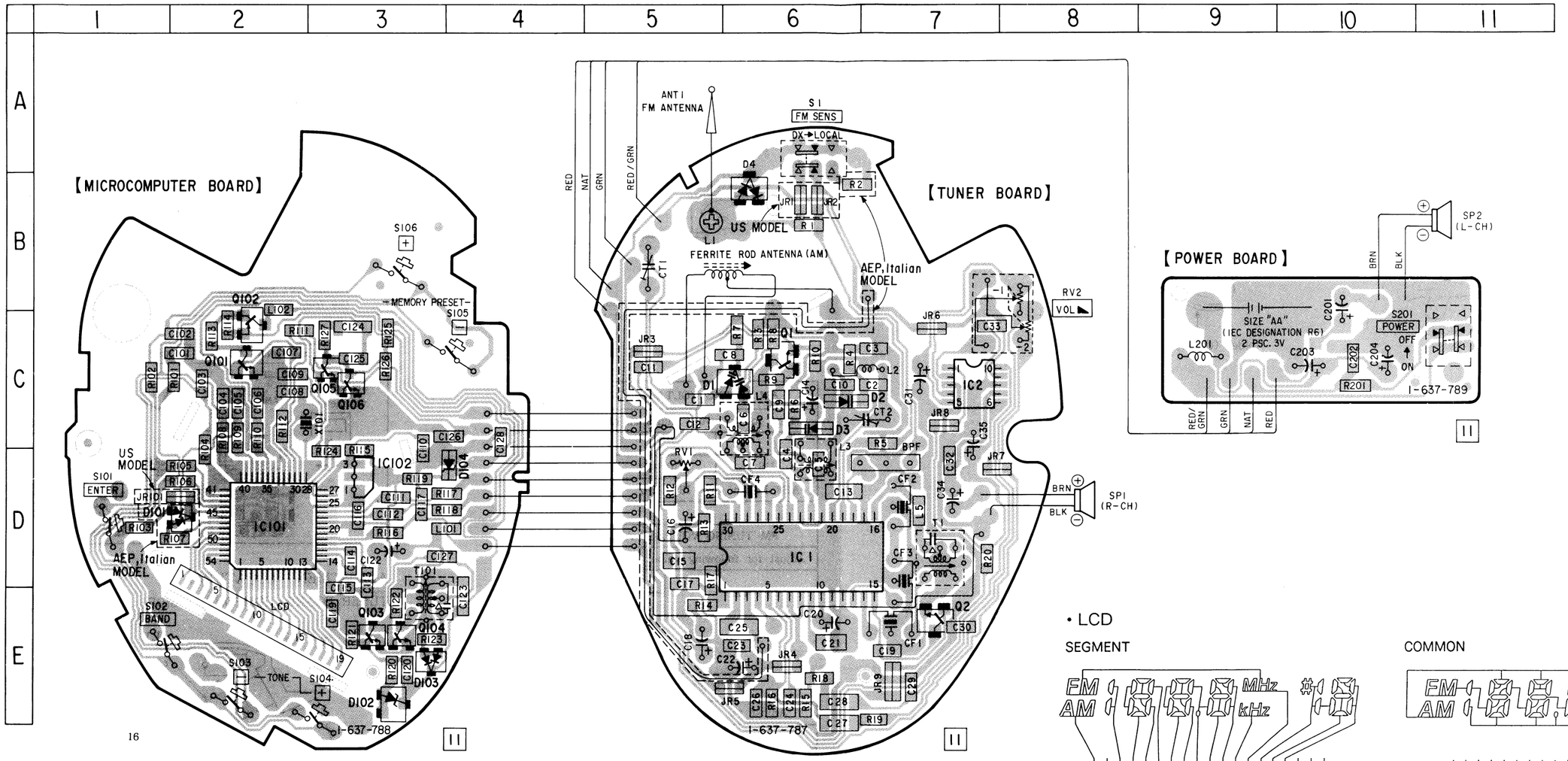
- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

Flexible Circuit Board Repairing

- Keep the temperature of the soldering iron around 270 ℃ during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

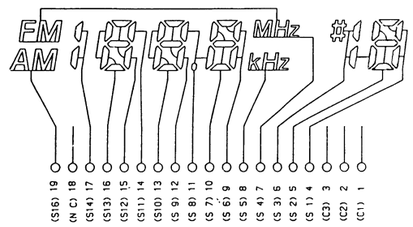
SECTION 4
DIAGRAMS

4-1. PRINTED WIRING BOARDS

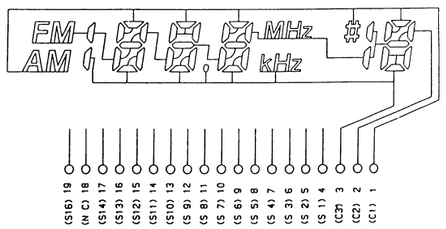


• LCD

SEGMENT

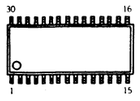


COMMON

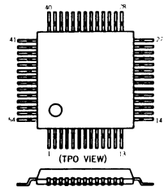


SEMICONDUCTOR LEAD LAYOUTS

CXA1238M



μPD1715G-652-22



Note on Printed Wiring Boards :

- o—— : parts extracted from the component side.
- —— : parts extracted from the conductor side.

Note on Schematic Diagram :

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- B+ : B+ Line
- ▭ : adjustment for repair.

- Power voltage is dc 3V and fed with regulated dc power supply from Battery Terminal.
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark : FM
  ( ) : AM
- Voltages are taken with a VOM (Input impedance 10M Ω). Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ⇨ : FM

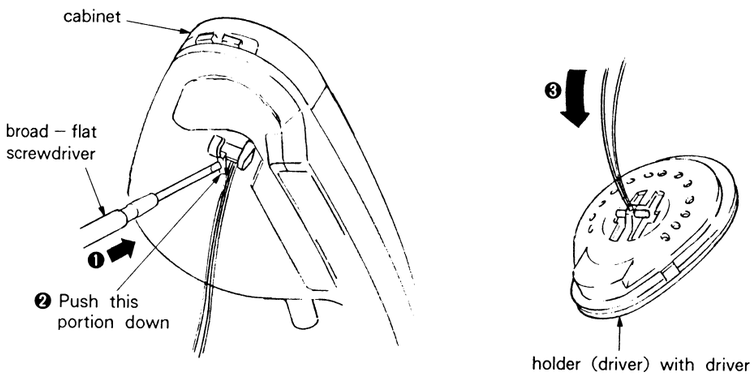
• Semiconductor Location

Ref. No.	Location	Ref. No.	Location	Ref. No.	Location
D1	C-6	IC1	D-6	Q102	B-2
D2	C-6	IC2	C-7	Q103	E-3
D3	C-6	IC101	D-2	Q104	E-3
D4	A-6	IC102	C-3	Q105	C-3
D101	D-2			Q106	C-3
D102	E-3	Q1	C-6		
D103	E-3	Q2	D-7		
D104	C-4	Q101	C-2		

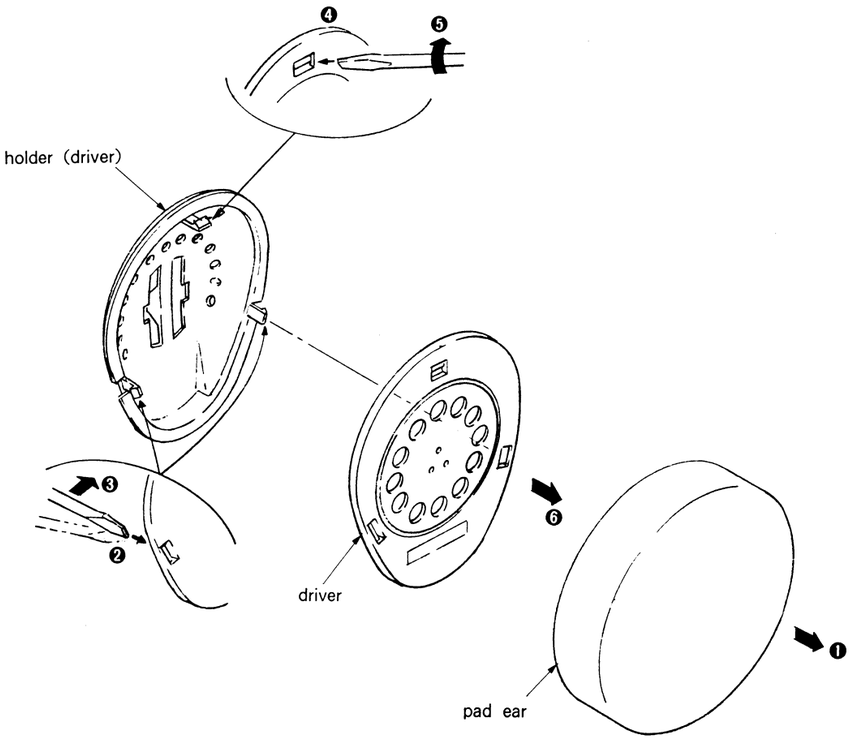
SECTION 2
DISASSEMBLY

Note : Follow the disassembly procedure in the numerical order given.

1. HOLDER (DRIVER) WITH DRIVER REMOVAL



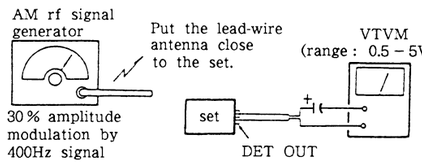
2. DRIVER REMOVAL



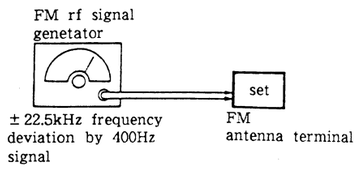
SECTION 3
ADJUSTMENTS

3-1. ELECTRICAL ADJUSTMENTS

AM


AM rf signal generator
Put the lead-wire antenna close to the set.
VTVM (range : 0.5 – 5V AC)
30 % amplitude modulation by 400Hz signal
set
DET OUT

FM



• Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

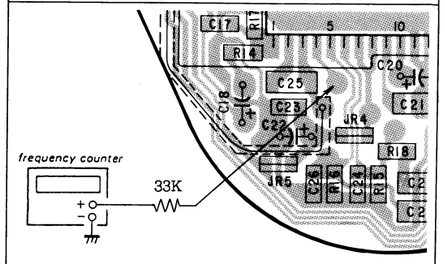
AM TUNING VOLTAGE ADJUSTMENT		
Adjust for following values on digital voltmeter		
	L4	
US	1710 kHz	8V (± 0.05)
AEP, Italian	1602 kHz	7.15V (± 0.05)

FM TUNING VOLTAGE ADJUSTMENT	
Adjust for following values on digital voltmeter	
L3	108 MHz
	10V (± 0.05)

AM TRACKING ADJUSTMENT		
Adjust for a maximum reading on VTVM		
	L1	CT1
US	580 kHz	1490 KHz
AEP, Italian	621 kHz	1395 kHz

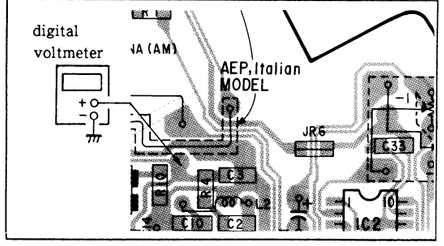
FM TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM	
L2	87.5 MHz
CT2	108 MHz

FM VCO ADJUSTMENT



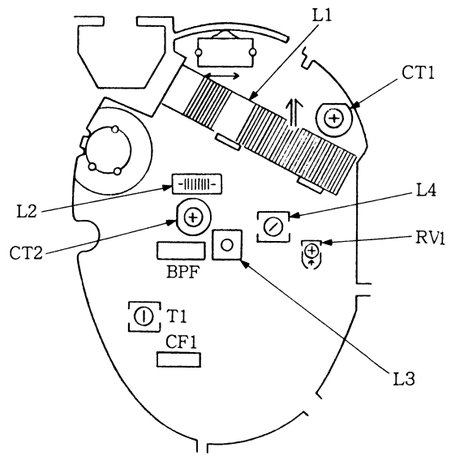
1. Tune the set to 98 MHz
2. Adjust RV1 for 76kHz (± 200Hz) reading on the frequency counter.

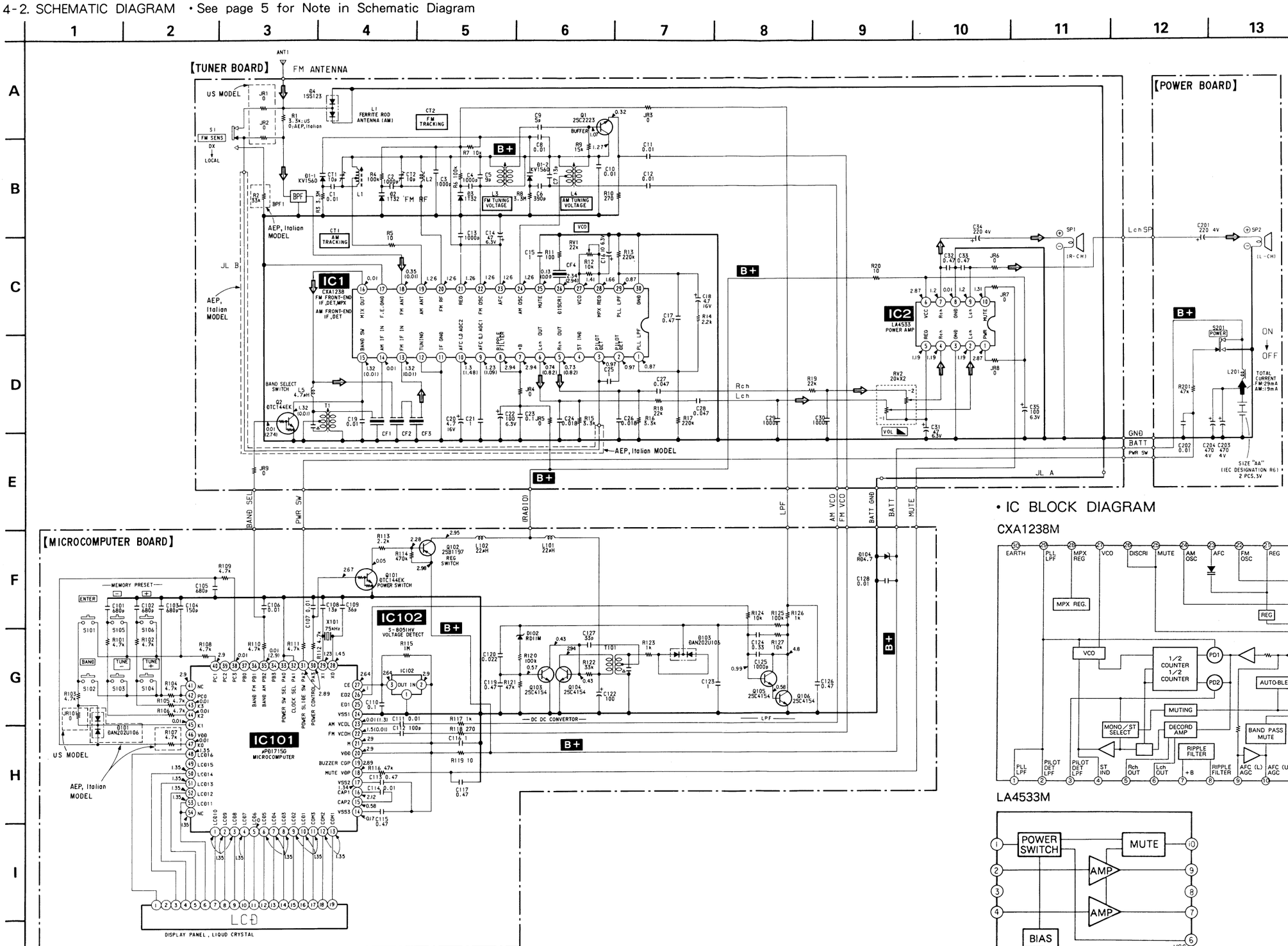
FM/AM TUNING VOLTAGE ADJUSTMENT



ADJUSTMENT LOCATION :

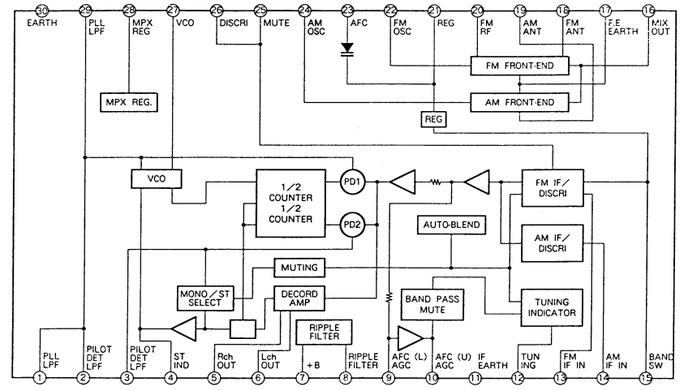
TUNER BOARD : COMPONENT SIDE



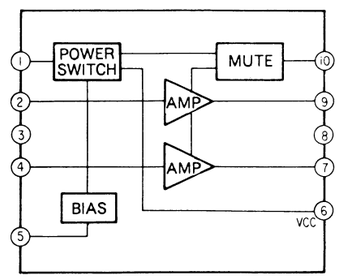


• IC BLOCK DIAGRAM

CXA1238M



LA4533M

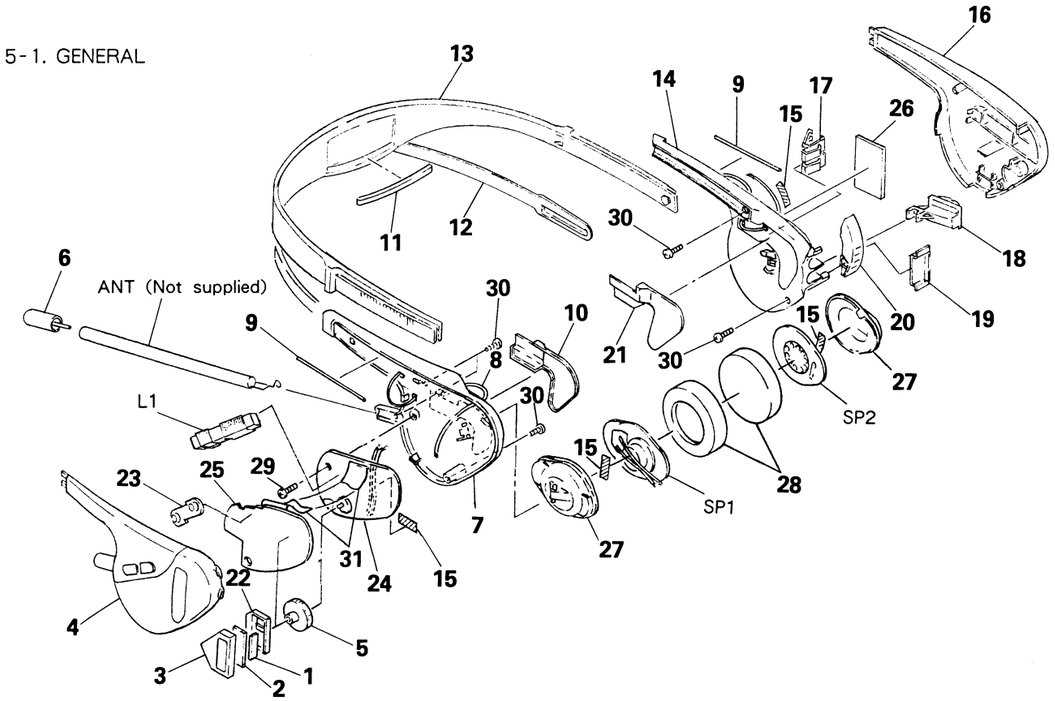


SECTION 5
EXPLODED VIEWS

NOTE :

- – XX, – X mean standardized parts, so they may have some differences from the original one.
- Color Indication of Appearance Parts
  Example :
  KNOB, BALANCE (WHITE)...(RED)
  ↑ ↑
  Parts color Cabinet's color
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

5-1. GENERAL



Ref.No	Part No.	Description	Remarks
1	1-535-889-11	CONDUCTOR, CONNECTION	
2	1-809-277-11	DISPLAY PANEL, LIQUID CRYSTAL	
3	* 3-366-093-01	HOLDER (A) (SHIELD)	
4	A-3635-499-A	CABINET (FRONT) (R-CH) ASSY	
5	3-366-086-01	KNOB (VOLUME)	
6	* 3-902-549-01	CAP, ANTENNA	
7	3-366-105-01	CABINET (REAR) (R-CH) (US)	
7	3-366-105-11	CABINET (REAR) (R-CH) (AEP, Italian)	
8	1-590-455-11	CORD, CONNECTION	
9	3-366-088-01	SPRING (CLICK ADJUSTMENT)	
10	3-366-100-01	LID (RIGHT)	
11	3-366-279-01	CUSHION	
12	3-902-537-01	BELT (SUB)	
13	3-366-102-01	BELT, MAIN	
14	3-366-106-01	CABINET (REAR) (L-CH)	
15	3-831-441-XX	CUSHION	
16	3-366-104-01	CABINET (FRONT) (L-CH)	
17	3-366-090-01	SPRING (BATTERY)	
18	3-366-087-01	KNOB, POWER	
19	3-366-089-01	TERMINAL (+-), BATTERY	
20	3-366-095-01	LID, BATTERY CASE	
21	3-366-101-01	LID (LEFT)	
22	3-366-098-01	HOLDER (LCD)	
23	1-572-650-11	SWITCH, RUBBER KEY	
24	* A-3661-231-A	TUNER BOARD, COMPLETELE (US)	
24	* A-3661-261-A	TUNER BOARD, COMPLETLE (AEP, Italian)	
25	* A-3661-259-A	MICROCOMPUTER BOARD, COMPLETE (AEP, Italian)	
25	* A-3661-229-A	MICROCOMPUTER BOARD, COMPLETE (US)	
26	* 1-637-789-11	POWER, BOARD	
27	3-366-096-01	HOLDER (DRIVER)	
28	3-368-132-01	PAD, EAR	
29	3-318-203-71	SCREW (B1.7X5), TAPPING	
30	3-318-203-11	SCREW (B1.7X6), TAPPING	
31	1-590-456-11	CORD, CONNECTION	
L1	1-402-548-11	ANTENNA, FERRITE-ROD (MW)	
SP1	1-505-120-11	DRIVER (030F024)	
SP2	1-505-120-11	DRIVER (030F024)	

SECTION 6
ELECTRICAL PARTS LIST

MICROCOMPUTER

NOTE:

- Due to standardization, replacements in the parts list may be defferent from the parts specified in the diagrams or the components used on the set.
- – XX, – X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL : metal-film resistor
  METAL OXIDE : Metal Oxide-film resistor
  F : nonflammable
- Items marked "*"are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u : μ, for example :
  uA... : μA... , uPA... , μPA... ,
  uPB... , μPB... , uPC... , μPC... ,
  uPD..., μPD...
- CAPACITORS :
  uF : μF
- COILS
  uH : μH

Ref.No	Part No.	Description	Remarks
	* A-3661-229-A	MICROCOMPUTER BOARD, COMPLETE (US)	
	* A-3661-259-A	MICROCOMPUTER BOARD, COMPLETE (AEP, Italian)	
		**********	
		< CAPACITOR >	
C101	1-163-137-00	CERAMIC CHIP 680PF 5% 50V	
C102	1-163-137-00	CERAMIC CHIP 680PF 5% 50V	
C103	1-163-137-00	CERAMIC CHIP 680PF 5% 50V	
C104	1-163-121-00	CERAMIC CHIP 150PF 5% 50V	
C105	1-163-137-00	CERAMIC CHIP 680PF 5% 50V	
C106	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C107	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C108	1-163-096-00	CERAMIC CHIP 13PF 5% 50V	
C109	1-163-106-00	CERAMIC CHIP 136PF 5% 50V	
C110	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C111	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C112	1-163-117-00	CERAMIC CHIP 100PF 5% 50V	
C113	1-164-005-11	CERAMIC CHIP 0.47uF 25V	
C114	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C115	1-164-005-11	CERAMIC CHIP 0.47uF 25V	
C116	1-162-638-11	CERAMIC CHIP 1uF 16V	
C117	1-164-005-11	CERAMIC CHIP 0.47uF 25V	
C119	1-164-005-11	CERAMIC CHIP 0.47uF 25V	
C120	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C122	1-124-584-00	ELECT 100uF 20% 10V	
C123	1-162-638-11	CERAMIC CHIP 1uF 16V	
C124	1-162-568-11	CERAMIC CHIP 0.33uF 25V	
C125	1-163-141-00	CERAMIC CHIP 0.001uF 5% 50V	
C126	1-164-005-11	CERAMIC CHIP 0.47uF 25V	
C127	1-163-105-00	CERAMIC CHIP 33PF 5% 50V	
C128	1-164-232-11	CERAMIC CHIP 0.01uF 50V	

Ref.No	Part No.	Description	Remarks
		< DIODE >	
D101	8-719-941-86	DIODE DAN202U (AEP, Italian)	
D102	8-719-106-80	DIODE RD11M-B2	
D103	8-719-941-86	DIODE DAN202U	
D104	8-719-105-73	DIODE RD4.7M-B2	
		< IC >	
IC101	8-759-153-24	IC uPD1715G-652-22	
IC102	8-759-947-95	IC S-8051HN-CD-S	
		< JUMPER >	
JR101	1-216-295-00	METAL CHIP 0 (US)	
		< COIL >	
L101	1-412-010-41	INDUCTOR CHIP 22uH	
L102	1-412-010-41	INDUCTOR CHIP 22uH	
		< TRANSISTOR >	
Q101	8-729-901-01	TRANSISTOR DTC144EK	
Q102	8-729-904-87	TRANSISTOR 2SB1197K-R	
Q103	8-729-602-21	TRANSISTOR 2SC4154-F	
Q104	8-729-602-21	TRANSISTOR 2SC4154-F	
Q105	8-729-602-21	TRANSISTOR 2SC4154-F	
Q106	8-729-602-21	TRANSISTOR 2SC4154-F	
		< RESISTOR >	
R101	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R102	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R103	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R104	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R105	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	

MICROCOMPUTER | TUNER

Ref.No	Part No.	Description	Remarks
R106	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R107	1-216-065-00	METAL CHIP 4.7K 5% 1/10W(AEP, Italian)	
R108	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R109	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R110	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R111	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R112	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R113	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R114	1-216-113-00	METAL CHIP 470K 5% 1/10W	
R115	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R116	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R117	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R118	1-216-035-00	METAL CHIP 270 5% 1/10W	
R119	1-216-001-00	METAL CHIP 10 5% 1/10W	
R120	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R121	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R122	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R123	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R124	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R125	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R126	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R127	1-216-073-00	METAL CHIP 10K 5% 1/10W	
		< SWITCH >	
S101	1-571-914-11	SWITCH, KEY BOARD (ENTER)	
S102	1-571-914-11	SWITCH, KEY BOARD (BAND)	
S103	1-554-088-00	SWITCH, KEY BOARD (-)	
S104	1-554-088-00	SWITCH, KEY BOARD (+)	
S105	1-572-650-11	SWITCH, RUBBER KEY (-)	
S106	1-572-650-11	SWITCH, RUBBER KEY (+)	
		< TRANSFORMER >	
T101	1-449-138-11	TRANSFORMER, DC-DC CONVERTER	
		< CRYSTAL >	
X101	1-567-769-11	VIBRATOR, CRYSTAL (75kHz)	
**********			
		* A-3661-231-A TUNER BOARD, COMPLETE (US)	
		* A-3661-261-A TUNER BOARD, COMPLETE (AEP, Italian)	
		**********	
	1-590-456-11	CORD, CONNECTION	
BPF1	1-236-839-11	FILTER, BAND PASS	

Ref.No	Part No.	Description	Remarks
		< CAPACITOR >	
C1	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C2	1-163-141-00	CERAMIC CHIP 0.001uF 5% 50V	
C3	1-163-141-00	CERAMIC CHIP 0.001uF 5% 50V	
C4	1-163-141-00	CERAMIC CHIP 0.001uF 5% 50V	
C5	1-163-092-00	CERAMIC CHIP 9PF 0.25PF 50V	
C6	1-163-131-00	CERAMIC CHIP 390PF 5% 50V	
C7	1-163-096-00	CERAMIC CHIP 13PF 5% 50V	
C8	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C9	1-163-088-00	CERAMIC CHIP 5PF 50V	
C10	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C11	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C12	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C13	1-163-205-00	CERAMIC CHIP 0.001uF 5% 50V	
C14	1-126-154-11	ELECT 47uF 20% 6.3V	
C15	1-162-638-11	CERAMIC CHIP 1uF 16V	
C16	1-126-157-11	ELECT 10uF 20% 16V	
C17	1-164-005-11	CERAMIC CHIP 0.47uF 25V	
C18	1-126-163-11	ELECT 0.68uF 20% 50V	
C19	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C20	1-126-163-11	ELECT 0.68uF 20% 50V	
C21	1-162-638-11	CERAMIC CHIP 1uF 16V	
C22	1-124-584-00	ELECT 100uF 20% 10V	
C23	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C24	1-163-024-00	CERAMIC CHIP 0.018uF 10% 50V	
C25	1-162-638-11	CERAMIC CHIP 1uF 16V	
C26	1-163-024-00	CERAMIC CHIP 0.018uF 10% 50V	
C27	1-163-075-00	CERAMIC CHIP 0.047uF 50V	
C28	1-163-075-00	CERAMIC CHIP 0.047uF 50V	
C29	1-163-141-00	CERAMIC CHIP 0.001uF 5% 50V	
C30	1-163-141-00	CERAMIC CHIP 0.001uF 5% 50V	
C31	1-126-154-11	ELECT 47uF 20% 6.3V	
C32	1-164-005-11	CERAMIC CHIP 0.47uF 25V	
C33	1-164-005-11	CERAMIC CHIP 0.47uF 25V	
C34	1-124-434-00	ELECT 220uF 20% 4V	
C35	1-124-584-00	ELECT 100uF 20% 10V	
		< FILTER >	
CF1	1-567-929-11	FILTER, CERAMIC	
CF2	1-578-791-11	FILTER, CERAMIC	
CF3	1-578-791-11	FILTER, CERAMIC	
CF4	1-578-791-11	FILTER, CERAMIC	
		< TRIMMER >	
CT1	1-141-304-21	CAP, TRIMMER 10PF	
CT2	1-141-304-21	CAP, TRIMMER 10PF	

TUNER | POWER

Ref.No	Part No.	Description	Remarks
		< DIODE >	
D1	8-719-951-05	DIODE KV1560	
D2	8-719-949-46	DIODE 1T32	
D3	8-719-949-46	DIODE 1T32	
D4	8-719-800-76	DIODE 1SS226	
		< IC >	
IC1	8-752-037-51	IC CXA1238M	
IC2	8-759-802-75	IC LA4533M	
		< JUMPER >	
JR1	1-216-295-00	METAL CHIP 0 (US)	
JR2	1-216-295-00	METAL CHIP 0 (US)	
JR3	1-216-295-00	METAL CHIP 0	
JR4	1-216-295-00	METAL CHIP 0	
JR5	1-216-295-00	METAL CHIP 0	
JR6	1-216-295-00	METAL CHIP 0	
JR7	1-216-295-00	METAL CHIP 0	
JR8	1-216-295-00	METAL CHIP 0	
JR9	1-216-296-00	METAL CHIP 0 5% 1/8W	
		< COIL >	
L1	1-402-548-11	ANTENNA, FERRITE-ROD (MW)	
L2	* 1-428-041-11	COIL, AIR-CORE (FM)	
L3	* 1-460-057-11	COIL (WITH CORE) (FM)	
L4	1-406-269-11	COIL (OSC) (MW)	
L5	1-412-002-31	INDUCTOR CHIP 4.7uH	
		< TRANSISTOR >	
Q1	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q2	8-729-901-01	TRANSISTOR DTC144EK	
		< RESISTOR >	
R1	1-216-061-00	METAL CHIP 3.3K 5% 1/10W (US)	
R1	1-216-295-00	METAL CHIP 0 5% 1/10W (AEP, Italian)	
R2	1-216-085-00	METAL CHIP 33K 5% 1/10W (AEP, Italian)	
R3	1-216-133-00	METAL CHIP 3.3M 5% 1/10W	
R4	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R5	1-216-001-00	METAL CHIP 10 5% 1/10W	
R6	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R7	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R8	1-216-133-00	METAL CHIP 3.3M 5% 1/10W	
R9	1-216-077-00	METAL CHIP 15K 5% 1/10W	
R10	1-216-035-00	METAL CHIP 270 5% 1/10W	
R11	1-216-025-00	METAL CHIP 100 5% 1/10W	
R12	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R13	1-216-105-00	METAL CHIP 220K 5% 1/10W	
R14	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R15	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R16	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R17	1-216-105-00	METAL CHIP 220K 5% 1/10W	
R18	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R19	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R20	1-216-001-00	METAL CHIP 10 5% 1/10W	
		< VARIABLE RESISTOR >	
RV1	1-237-606-11	RES, ADJ, METAL GLAZE 22K	
RV2	1-241-007-11	RES, VAR, CARBON 20K/20K (VOL▶)	
		< SWITCH >	
S1	1-571-478-11	SWITCH, SLIDE (FM SENS)	
		< TRANSFORMER >	
T1	1-404-444-31	TRANSFORMER, IF 455KHZ	
		**********	
	* 1-637-789-11	POWER BOARD	
		**********	
		< CAPACITOR >	
C201	1-124-434-00	ELECT 220uF 20% 4V	
C202	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C203	1-126-518-11	ELECT 470uF 20% 4V	
C204	1-126-518-11	ELECT 470uF 20% 4V	
		< COIL >	
L201	1-410-294-11	INDUCTOR, MICRO	
		< RESISTOR >	
R201	1-216-089-00	METAL CHIP 47K 5% 1/10W	
		< SWITCH >	
S201	1-571-478-11	SWITCH, SLIDE (POWER)	
		**********	
		MISCELLANEOUS	
		**********	
1	1-535-889-11	CONDUCTOR, CONNECTION	
2	1-809-277-11	DISPLAY PANEL, LIQUID CRYSTAL	
8	1-590-455-11	CORD, CONNECTION	
8	1-590-456-11	CORD, CONNECTION	
23	1-572-650-11	SWITCH, RUBBER KEY	
L1	1-402-548-11	ANTENNA, FERRITE-ROD (MW)	
SP1	1-505-120-11	DRIVER (030F024)	
SP2	1-505-120-11	DRIVER (030F024)	
		**********	

ACCESSORY & PACKING MATERIAL

*	3-366-011-01	CUSHION
*	3-366-012-01	INDIVIDUAL CARTON (US)
*	3-366-015-01	INDIVIDUAL CARTON (AEP, Italian)
	3-752-813-11	MANUAL, INSTRUCTION (AEP, Italian) (ENGLISH, FRENCH, GERMAN, SPANISH, DUTCH, ITALIAN)
	3-752-813-21	MANUAL, INSTRUCTION (ENGLISH) (US)

English
9181678-1
Printed in Japan
©1991.2
Published by Customer Relations and Service Group

9-956-199-11

Sony Corporation
Personal Communication Group